

at least one door movably supported by the frame for closing an opening in the frame and for allowing selective access to the refrigerated enclosure;

at least one product support within the refrigerated enclosure on the product support can be seen from outside the display case;

a lamp having first and second ends supported by the frame to illuminate product on the product support;

a first socket on a first end of the lamp for providing electrical energy to the lamp, wherein the first socket includes socket contacts having a surface area available for electrical contact of at least 0.05 square inch;

a second socket on the second end of the lamp for providing electrical energy to the lamp, wherein the second socket includes socket contacts having a surface area available for electrical contact of at least 0.05 square inch;

a frame conductor for carrying current wherein the frame conductor has a surface area available for electrical contact of at least 0.05 square inch;

a ballast electrically coupled to the frame conductor and configured for operating at a frequency above 100 cycles per second and above 200 volts; and

B' *could*
a releasable junction between the at least one frame conductor and the first socket contacts for forming an electrical bridge between the at least one frame conductor and the first socket contacts wherein the bridge has a surface area available for electrical contact of at least 0.05 square inch.

REMARKS

Claims 81-118 are pending in the application, claims 100-118 added by the above-amendment. Claims 1-80 were earlier canceled.

Claims 81 and 89-91 are rejected under 35 U.S.C. 103 (a) as being unpatentable over *Amstutz et al.*, U.S. patent No. 4,955,044, in view of *Pacholok*, U.S. patent No. 4,904,903.

Claims 82-88 and 92-99 are rejected under 35 U.S.C. 103 (a) as being unpatentable over *Amstutz*

et al. in view of *Kelman*, U.S. patent No. 2,522,044, and further in view of *Seoke et al.*, U.S. patent No. 5,768,898. These rejections are respectfully traversed.

Applicant's disclosure was discussed in the response filed March 20, 2000, paper No. 12. It was pointed out there that Applicant disclosed a lighting system for refrigerated display cases that improves the operating characteristics of the lighting system, including reducing the occurrence of such problems as ballast failure, lamp failure and component failure. In one aspect of the inventions, the display case includes a ballast and a lamp socket where the ballast operates at a frequency above 100 Hz and above 200 volts. The socket preferably includes contacts having a surface area available for electrical contact of at least 0.008 square inch. A junction allows wiring to releasably couple a ballast to the socket, and also preferably has a surface area available for electrical contact of at least 0.008 square inch. In one embodiment, the junction includes at least one pin connector and at least one mating hollow cylindrical connector enclosed in a plastic housing. In another embodiment, the wiring connecting the ballast and the socket has a size no smaller than 16 gauge. Conventional wiring in conventional refrigerated display cases uses smaller wire sizes, and it is believed that such smaller size contributes to component failures in such environments encountered in refrigerated display cases.

Amstutz et al. show a lighted display case having a ballast 44 and a socket and plug combination 107 and 105, respectively, but teach nothing about any system characteristics which would be suitable for refrigerated display cases or which would reduce the occurrence of problems experienced in sub-ambient temperatures with the ballast and lighting systems encountered in refrigerated display cases. Nothing in *Amstutz et al.* teach or suggest a structure or functions that improve the ability of a ballast and lighting circuit to reliably drive a lamp in cold conditions without excessively overheating the ballast or producing arcing between components.

Kelman shows a conventional fluorescent light socket of the tombstone style, having *arcuate* contact surfaces. These sockets are prone to the arcing and over heating problems encountered in lighting systems in refrigerated display cases. Additionally, as mentioned

previously, the Australian reference of *Orford* shows a socket that may have cylindrical contact surfaces for contacting pins on a fluorescent lamp. This Australian reference teaches the use of the socket for refrigerated display cases. However, neither *Kelman* or *Orford* teach or suggest the inventions disclosed and claimed herein.

Seoke shows a refrigerator having a fluorescent lamp with a lamp cover 15 separating the lamp from the cold compartment. An auxiliary heater 28 is used to improve the operation of the lighting system, and is not seen how there is any suggestion or teaching that *Seoke* can be combined with any of the other references relied upon by the Examiner. It is also not seen how the combination suggested by the Examiner achieves the claimed inventions.

Pacholok teaches a ballast for high intensity discharge lamps. *Pacholok* mentions a test circuit using an adjustable power supply with a voltage range from zero to 200 volts, but does not appear to refer to any normal operation at any voltages higher than 100 volts (see the FIGS. 1b - 1m). The higher voltages appear to be no greater than 200 volts. *Pacholok* describes a test setup for observing the nature of dynamic arc resistance, and Applicant can find no indication of a lamp operating voltage other than about 100 volts. While it is noted that *Pacholok* induces a short pulse exceeding 1,000 volts, this is a pulse voltage used to start the lamp but the lamp is not operated at that voltage. There is no suggestion in *Pacholok* either of operating at greater than 100 volts or of any aspects of the claimed inventions. Moreover, there is no teaching or suggestion in any of the references that *Pacholok* can be combined with any of the other references of record.

Consider now several representative claims in the application. Independent claim 81 recites in part:

“an electronic ballast . . . for operating . . . above 200 volts;

at least one lamp socket supported relative to the frame and having socket contacts for supplying electrical energy to a lamp having cylindrical contacts through the socket contacts, wherein the socket contacts have a surface area available for electrical contact of at least 0.008 square inch;

at least one electrical conductor for electrically coupling the ballast to the socket, wherein the conductor has a surface area available for electrical contact of at least 0.008 square inch; and

a junction between the at least one electrical conductor and the contacts of the at least one lamp socket for forming an electrical bridge between the at least one electrical conductor and the contacts wherein the bridge has a surface area available for electrical contact of at least 0.008 square inch."

None of the references teach or suggest the claimed combination. Moreover, none of the references, taken singly or in combination, teach or suggest an electronic ballast operating above 200 volts in the claimed combination, socket contacts having a surface area available for electrical contact of at least 0.008 square inch in the claimed combination, a conductor having a surface area available for electrical contact of at least 0.008 square inch, or a junction having a surface area available for electrical contact of at least 0.008 square inch. *Amstutz et al.* fail to teach or suggest the claimed combination or any of the referenced elements, and each of the other references relied upon likewise fail to teach or suggest the claimed combination or any of the referenced elements. Even if the references can be combined as the Examiner asserts, they would not produce the claimed combination. Nonetheless, there is no teaching or suggestion that *Amstutz et al.* and *Pacholok* can be combined, much less with the result asserted by the Examiner.

Because *Pacholok* fails to teach or suggest the elements relied upon by the Examiner, the entire rejection based on *Pacholok* should be re-considered. Claims 81 and 89-91 should be patentable.

Claims 82-99 are dependent directly or indirectly from independent claim 81 and are asserted as being patentable for the same reasons as were discussed with respect to claim 81 and for the additional limitations contained in the independent claims and for the combinations recited in the dependent claims. Note claim 85 reciting a wire size no smaller than 16 gauge. The claimed combination is not simply a matter of design choice. Note also claim 90 where "the

junction includes at least one in connector and at least one mating hollow cylindrical connector and wherein the connectors are enclosed in a plastic housing." Note claim 93 "further including a ballast capable of operating at temperatures below zero degrees Farenheit." Note also the contact surface area limitations recited in claims 94-96. Note also limitations in claims 97-99.

New claims 100-118 more specifically recite a refrigerated display case. None of the references other than *Orford*, taken singly or in combination, teach or suggest a refrigerated display case, and none teach or suggest the combination as claimed.

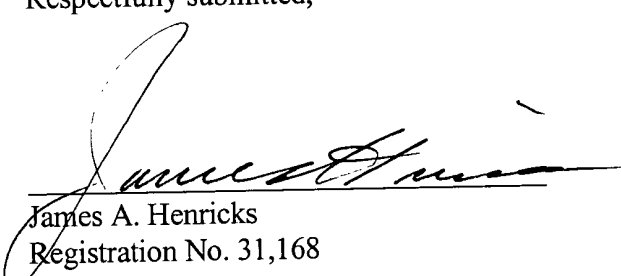
Reconsideration of the claims in view of the foregoing remarks is respectfully requested. Early notice of allowance of the claims herein is earnestly solicited. If there are any issues requiring further discussion, Applicant invites the Examiner to call the undersigned attorney.

This Response is being filed with a petition for a three-month extension of time.

The Commissioner is hereby authorized to charge any additional fees that may be required, or credit any overpayment, relating to this communication to Account No. 50-0655. A duplicate of this sheet is enclosed.

Respectfully submitted,

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